REMARKS

Claim Amendments

The amendments to claims 1 and 5 are supported in the specification as follows.

The lower limit of 0.021% Al recited in amended claims 1 and 5 is supported by steel G in Table 1-1 on page 23 of the specification. All of steels A to X, Z to ZZ in Table 1-1 and Table 1-2 (on page 24) of the specification recite an amount of Al that falls within the presently claimed range of 0.021 to 0.07%.

The upper limit of 0.004% N recited in amended claims 1 and 5 is supported by steel A in Table 1-1 in the specification. All of steels A to F, H to U, W, Z and ZZ of Table 1-1 and Table 1-2 recite an amount of N that falls within the presently claimed range of 0.004% or less.

It is therefore respectfully submitted that the amendments to claims 1 and 5 do not introduce any new matter.

Applicants' Present Claims

The present claims are directed to a high tensile cold-rolled steel sheet consisting essentially of 0.04 to 0.13% C, 0.3

to 1.2% Si, 1.0 to 3.5% Mn, 0.04% or less P, 0.01% or less S, 0.021 to 0.07% Al, 0.004% or less N, 0.2% or less Cr, by mass, and a balance of Fe and inevitable impurities; having a microstructure containing 50% or larger area percentage of ferrite and 10% or larger area percentage of martensite, and having a ratio of intervals of the martensite in the rolling direction to those in the sheet thickness direction of 0.85 to 1.5; and having a nano strength of the martensite of 8 GPa or larger (see applicants' present claim 1).

The present claims also pertain to a method for manufacturing a high tensile cold-rolled steel sheet, comprising the steps of: hot-rolling a steel slab consisting essentially of 0.04 to 0.13% C, 0.3 to 1.2% Si, 1.0 to 3.5% Mn, 0.04% or less P, 0.01% or less S, 0.021 to 0.07% Al, 0.004% or less N, 0.2% or less Cr, by mass, and a balance of Fe and inevitable impurities, into a steel sheet, followed by coiling at a coiling temperature ranging from 450°C to 650°C; cold-rolling the coiled steel sheet at a cold-rolling reduction ranging from 30 to 70%; annealing the cold-rolled steel sheet by heating to a temperature range of [the coiling temperature + the cold-rolling reduction percentage x 4.5] to [the coiling temperature + the cold-rolling reduction

percentage x 5.5] (°C); and cooling the annealed steel sheet to a temperature of 340°C or below at an average cooling rate of 10°C/s or higher, thereby manufacturing a high tensile cold-rolled steel sheet having a microstructure containing 50% or larger area percentage of ferrite and 10% or larger area percentage of martensite, and having a ratio of intervals of the martensite in the rolling direction to those in the sheet thickness direction of 0.85 to 1.5; and having a nano strength of the martensite of 8 GPa or larger (see applicants' present claim 5).

The steel sheets provided by applicants' present claims are desirably used as reinforcing members of pillars and dashboards of automobiles.

Obviousness Rejection Under 35 USC 103

In item no. 4 on page 2 of the December 27, 2010 Office Action, claims 1 to 8 were rejected under 35 USC 103 as being unpatentable over US 2003/0047256. This same rejection was set forth in the previous Office Action of August 3, 2010.

It was admitted in the previous Office Action of August 3, 2010 that US 2003/0047256 differs from applicants' claim 1

because it does not specifically teach the ratio of intervals of the martensite in the rolling direction to those in the sheet thickness direction or the nano strength of the martensite.

It was also admitted in the previous Office Action of August 3, 2010 that applicants' claim 5 differs from US 2003/0047256 for the following reasons:

(a) US 2003/0047256 does not teach the formula of the annealing temperature range recited in applicants' claim 5 and

(b) US 2003/0047256 does not specifically teach the ratio of the intervals of the martensite in the rolling direction to those in the sheet direction or the nano strength of the martensite.

In the "Response to Arguments" in item no. 5 on pages 2 to 4 of the December 27, 2010 Office Action, the Examiner summarized applicants' arguments set forth in the RESPONSE UNDER 37 CFR 1.111 filed October 18, 2010, and then responded to such arguments. The Examiner's responses to applicants' arguments are set forth in "a", "b" and "c", which begin on page 3, line 4 and continue to the last line of page 4 of the December 27, 2010 Office Action, which are reproduced as follows:

"Examiner's responses are as follows:

a. As discussed in the previous Office Action, referred to in the above rejection, US '256 differs from instant claim 5 because it does not teach the formula of the annealing temperature range. However, the annealing temperature range of 700°C-900°C disclosed by US'256 overlaps with the specific examples of annealing temperature ranges recited in Table 2-2 of the instant application. Therefore, in the absence of factual evidence demonstrating the criticality of the claimed annealing temperature formula, US'256 teaches annealing temperatures that satisfy the formula recited in claim 5. Also, [0045] of US'256 teaches that the steel made by the method of US'256 has a martensitic phase at the area ratio of 3% or more which overlaps with the instant claimed range. It is recommended that Applicant submit factual evidence and comparison data to demonstrate the criticality of the claimed formula for the annealing temperature range or factual evidence to demonstrate that the method of US'256 is not capable of obtaining a steel sheet with a microstructure containing 10% or larger area percentage of martensite as claimed.

b. In the absence of factual evidence to the contrary, the Examiner maintains the position that since the cold rolled sheet of US'256 has an overlapping composition with the composition recited in instant claim 1 and the steel sheet of US'256 is made using essentially the same process of the instant invention, one of ordinary skill in the art would have expected the steel sheet of US'256 to inherently have a similar ratio and nano strength of martensite. It is recommended that Applicant submit factual evidence to demonstrate that it is not possible to use

> the method of US'256 to obtain a steel sheet with the claimed ratio and nano strength of martensite.
>
> c. The scope of the prior art of US'256 is not limited to the specific embodiments it teaches. See MPEP 2123. Rather, the Examiner relied on the broadest teaching of US'256 which discloses an annealing temperature that overlaps with the specific examples of annealing temperature ranges recited in Table 2-2 of the instant application and an overlapping area ratio of martensitic phase and thus a prima facie case of obviousness exists."

Applicants' replies to the above Examiner's responses are as follows:

In the Table attached to applicants' RESPONSE UNDER 37 CFR 1.111 filed October 18, 2010, evidence was provided that showed that of all the 49 examples of US 2003/0047256, there are only 10 examples wherein the range of the annealing temperature is within the range of the presently claimed invention. Moreover, there are absolutely no steel sheets out of such 10 examples which contain martensite in an amount of at least 10% in terms of area ratio. The December 27, 2010 Office Action did not provide any reasons why applicants' aforesaid evidence was not sufficient to overcome the obviousness rejection.

It was suggested in the December 27, 2010 Office Action that further evidence be provided. However, applicants respectfully submit that the presently claimed invention patentably distinguishes over US 2003/0047256 based on the evidence presently on record and for the reasons discussed as follows.

US 2003/0047256 and the presently claimed invention are owned by the same assignee. Applicants are thus well aware of US 2003/0047256. For the following reasons, applicants respectfully submit that the presently claimed invention substantially differs from US 2003/0047256.

It is respectfully submitted that the above claim amendments serve to patentably distinguish the presently claimed invention over US 2003/0047256.

Moreover, the steel sheet of US 2003/0047256 is a so-called "high-nitrogen steel." Such steel sheet can be imparted with a desirable BH (bake hardening) by increasing the amount of N therein. Strain age hardening is obtained by N, in lieu of C. Therefore, the N content of US 2003/0047256 is as much as 0.0050 to 0.0250%, and at the same time, the Al content is restricted to 0.02% or less for the purpose of preventing the consumption of N as AlN.

In contrast to US 2003/0047256, the inclusion of N is not necessary in the steel sheet according to the presently claimed invention, whereas up to 0.07% Al is contained to obtain its deoxidation effect.

The high tensile steel sheet of the presently claimed invention affords simultaneously favorable strength-elongation balance and excellent crashworthiness by uniformly dispersing martensite grains in the ferrite phase.

Withdrawal of the 35 USC 103 rejection is thus respectfully requested.

Reconsideration and allowance of the above-identified application are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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